WCH Washington Closure Hanford

Interoffice Memorandum

TO: M. E. Allen X5-51

DATE: June 18, 2012

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FROM: P. P. Santos
Engineering Services
H4-20/372-9069

SUBJECT: **183-D WATER FILTER PLANT - FILTER BUILDING AND PUMP ROOM STRUCTURAL INSPECTION**

Note: Supersedes previously released IOM, CCN 165811

REF: 1) Drawing No.: W-71748 , "Hanford Engineer Works Filter Plant Bldg 183-D Key Plan Concrete."

A walk down was performed on May 03, 2012 to determine the structural adequacy of the 183-D Water Filter Plant – Filter Building and Pump Room. The primary purpose for the walk down was to determine worker safety for IH sampling. The area was assessed for the possibility of performing routine work to prepare the building for eventual Decontamination and Demolition. Attachment E details the results of the structural evaluation. Figure 1 shows the path taken to the electrical room during the walk down.

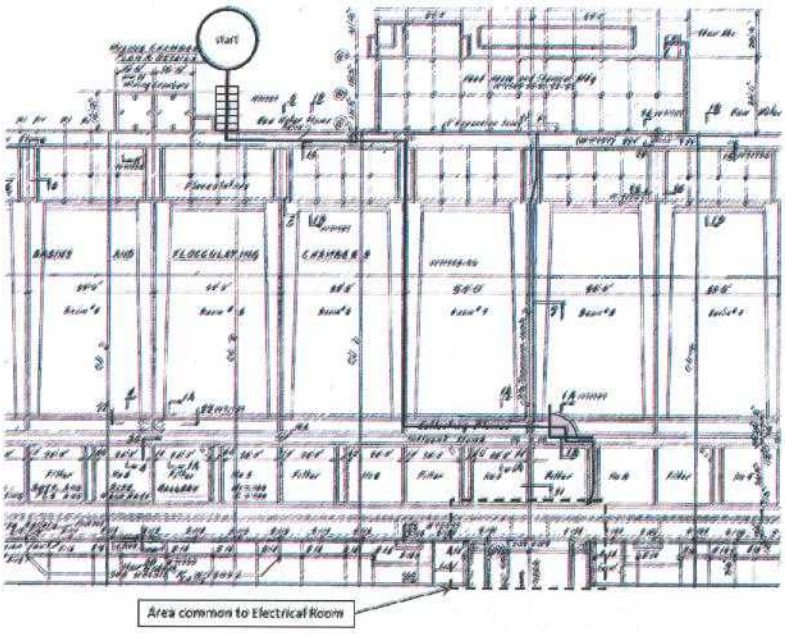

Figure 1 – 183-D Walk Down Path to Filter Building, and Pump Room and Electrical Switchgear

The Filter Building, and Pump Room and associated Electrical Switchgear Room were assessed. In conjunction with the attachments, below are comments from the evaluation.

- **EXTERIOR STRUCTURE, PATHS AND WALKWAYS** – The walkways exhibit concrete scaling due to the being exposed to a corrosive environment. Some of the walkways exhibit concrete spall with exposed rebar. The rebar common to these areas exhibited moderate corrosion. There are some wooden stairs that were NOT secured properly that are tripping hazards.

  Based on my inspection, this area is safe to perform intrusive work scope with the approval of the Project Safety Representative (PSR).

- **FILTER BUILDING** – The masonry walls appear to be structurally adequate. These walls did NOT exhibit cracking in the grout NOR did they exhibit excessive deflection.

  The pre-cast concrete roof panels exhibit severe degradation indicative of a structure that has been exposed to a corrosive environment. There is exposed rebar and significant deflections of the panels. In some cases, large pieces of the concrete panels have become detached and have fallen to the Filter Building floor. The panels also exhibited discoloration that is indicative of a potential chemical attack. These areas had "white stains" on their surfaces.

  There were areas that had water pooled on the ground. The area common to these wet areas did NOT exhibit structural degradation.

  There were also areas that exhibited biological waste. The area common to these hazard areas did NOT exhibit structural degradation.

  Based on my inspection, this area is not safe to perform intrusive work scope.

- **PUMP ROOM** – The masonry walls appear NOT to have structurally detrimental issues. These walls did NOT exhibit cracking in the grout nor did they exhibit excessive deflection.

  The pre-cast concrete roof panels exhibit severe degradation. The rebar of these panels were exposed to the environment. There were also panels which exhibited discoloration. These areas had "white stains" on its surface.

  Based on my inspection, this area is not safe to perform intrusive work scope.

- **PUMP ROOM BASEMENT AND ELECTRICAL SWITCHGEAR ROOM** - The concrete walls and roof exhibited mild discoloration but did NOT exhibit significant structural degradation.

  There were concrete and metal stairs that did not exhibit significant structural degradation.

Note that picture E3 showed particulates in the air. The area should be assessed accordingly to ensure personnel safety.

Based on my inspection, this area is not safe to perform intrusive work scope due to degradation of the above-grade Pump Room.

A fall hazard exists associated with the wooden and metal hand rails at the exterior of the building. The metal handrails appear to meet the requirements of WCH procedure SH-1-3.5, *Fall Prevention/Fall Protection* (OSHA 1926.502) and appear to have NO significant degradation. The wooden hand rails need to be evaluated and repaired as required. Note that access was blocked to reach the hand rails for a proper evaluation. Safety personnel are needed for the evaluation.

Conclusion: Intrusive work scope, such as prepping for demolition, asbestos abatement, and hazardous material removal, are NOT allowed to be performed in the Filter Building, Pump Room and Electrical Switchgear Room because of the significant structural degradation. Non-intrusive entries for sampling are allowed in the Electrical Room area since it did NOT exhibit significant structural degradation; however, an alternate path needs to be taken. Consult qualified Engineering personnel for further evaluation of the alternate path.

Attachments:
A) Building Exterior Pictures
B) Filter Building Pictures
C) Pump Room Pictures
D) Pump Room Basement and Electrical Switchgear Room Pictures
E) 183D Evaluation Checklist

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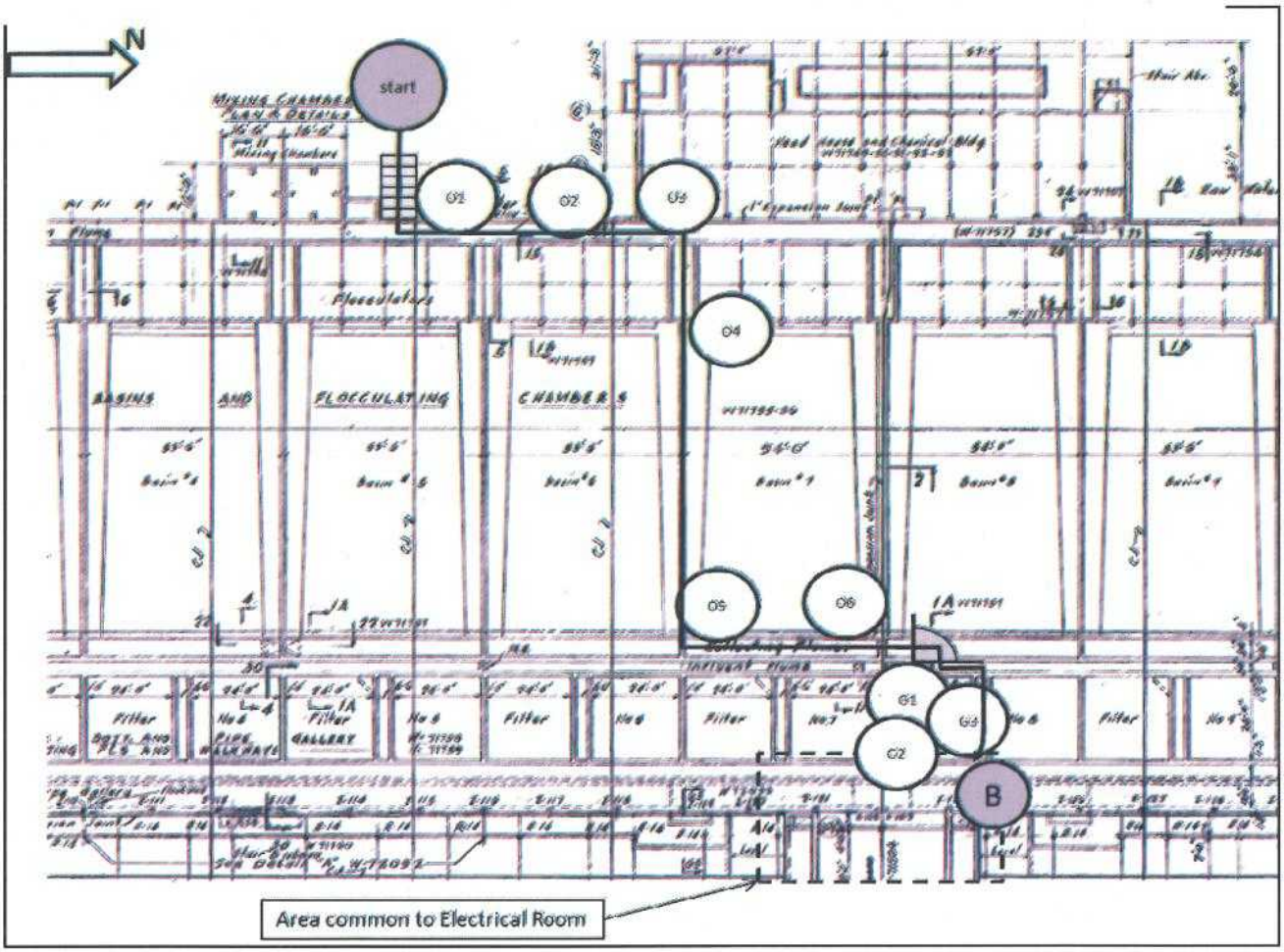
ATTACHMENT A – BUILDING EXTERIOR PICTURES

Figure 1 - Exterior Building and Filter Room Inspection Map

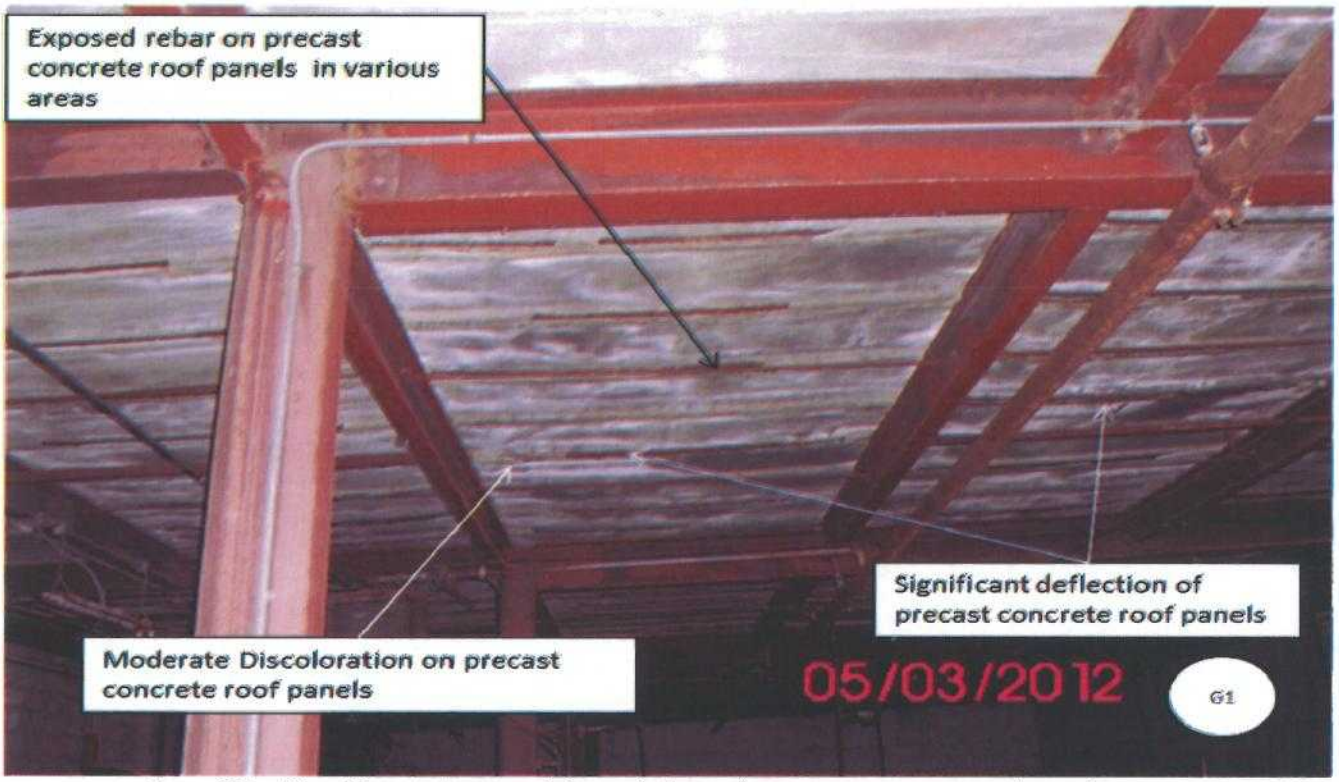


Reference Figure 1 for Locations

Item O1 – Filter Building Masonry Wall with NO significant Structural Degradation
Item O2 – Scaling of Concrete Walkway
Item O3 – Loose Wooden Stairs
Item O4 – Scaling of Concrete Walkway

Item O5 – Scaling of concrete Walkways (Note that metal handrails do NOT exhibit structural degradation
Item O6 – Concrete Spall on Walkway with exposed rebar

ATTACHMENT B – FILTER BUILDING PICTURES
Reference Attachment A - Figure 1 for Locations

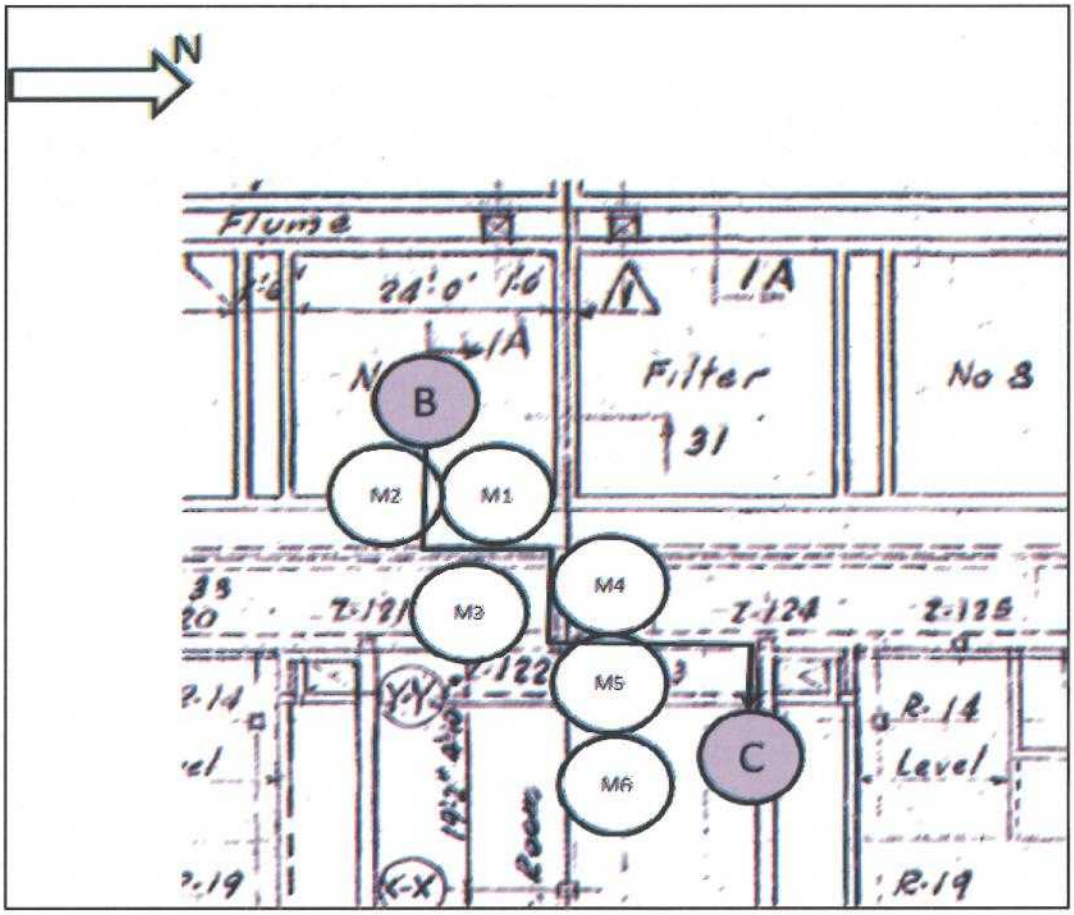


Item G1 – Significant structural degradation of concrete precast roof panels

Item G2 – Corrosion on metal wall panels and presence of water
Item G3 – Evidence of biological hazard

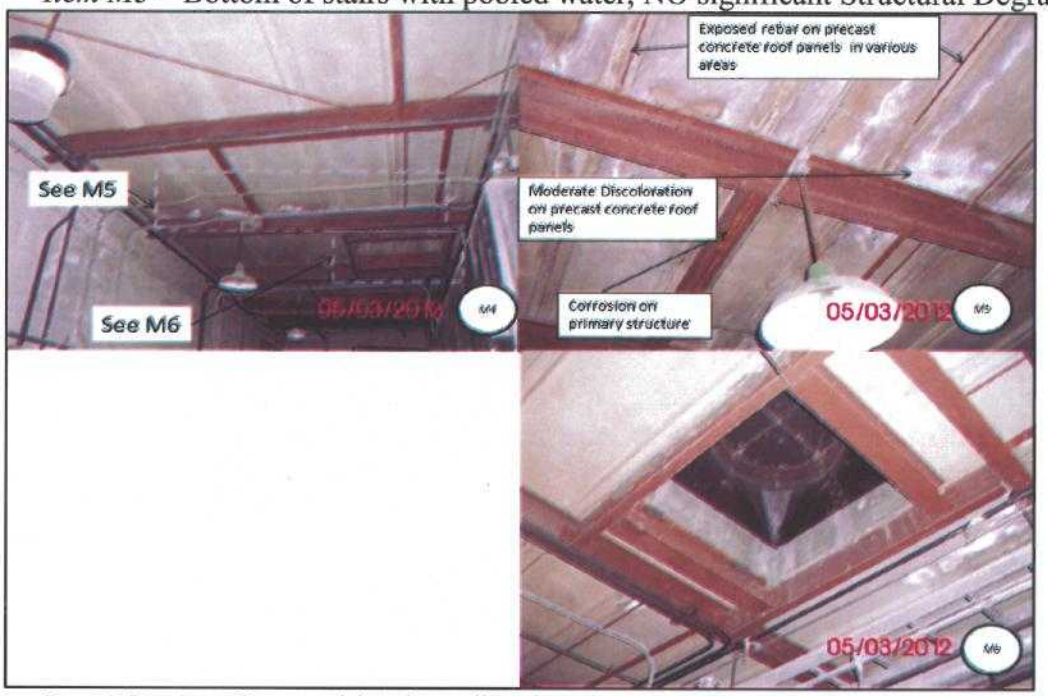
ATTACHMENT C – PUMP ROOM PICTURES

Figure 2 - Pump Room Inspection Map



Reference Figure 2 for Locations

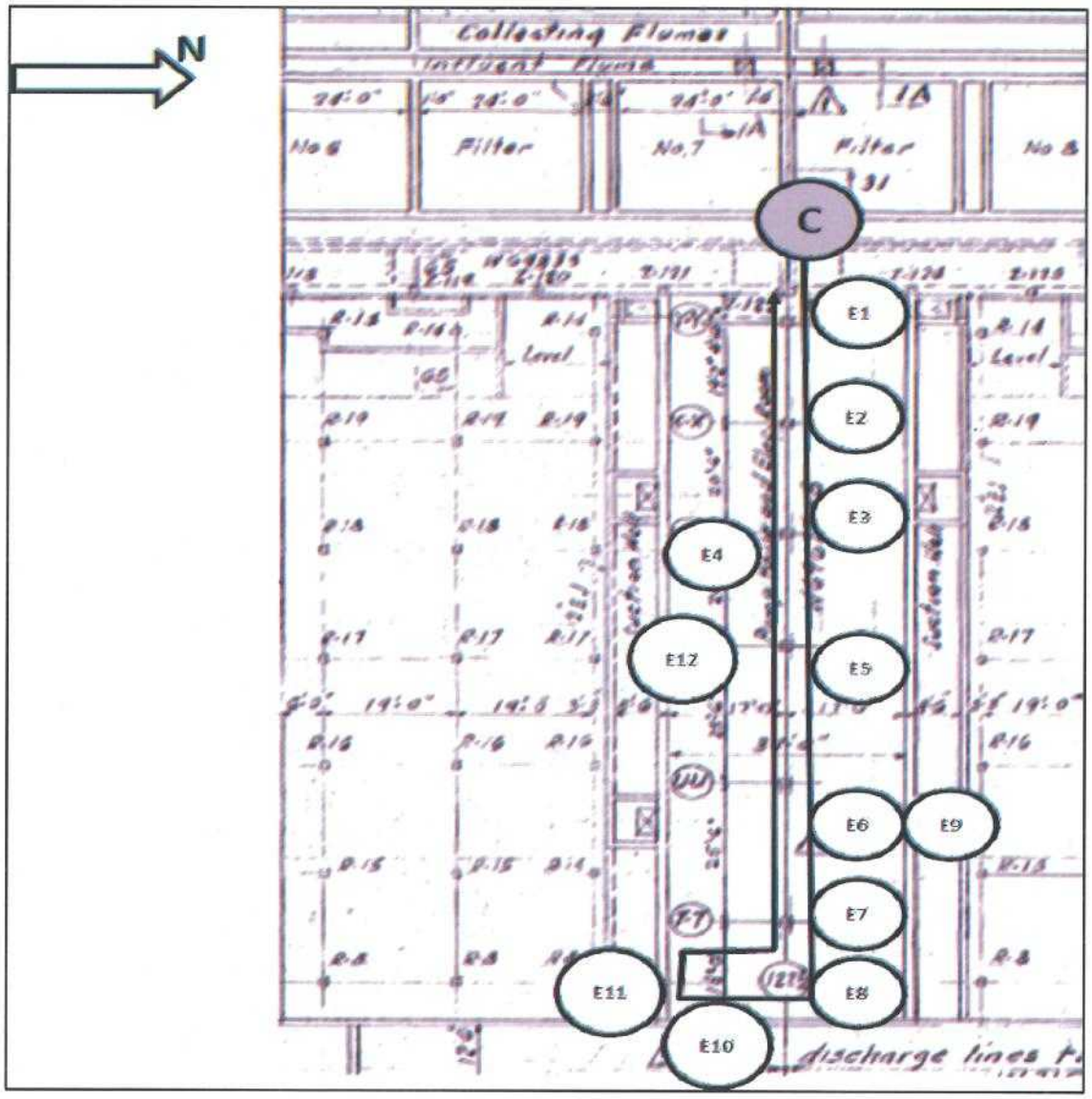
Item M1 – Structures and Components with NO significant Structural Degradation
Item M2 – Concrete Stair with NO significant Structural Degradation
Item M3 – Bottom of stairs with pooled water, NO significant Structural Degradation



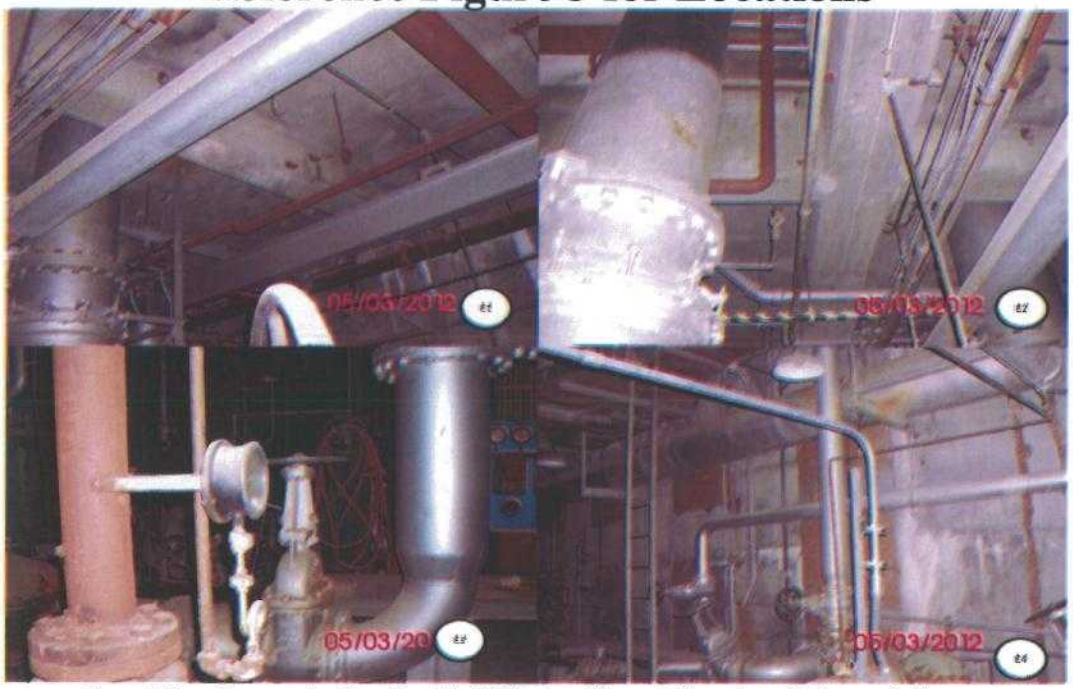
Item M4 – Roof area with minor discoloration, masonry walls have NO significant structural degradation
Item M5 – Metal Beams with moderate corrosion, exposed rebar, and discoloration
Item M6 – Penetration with NO significant structural degradation

ATTACHMENT D – PUMP ROOM BASEMENT & ELECTRICAL SWITCHGEAR ROOM PICTURES

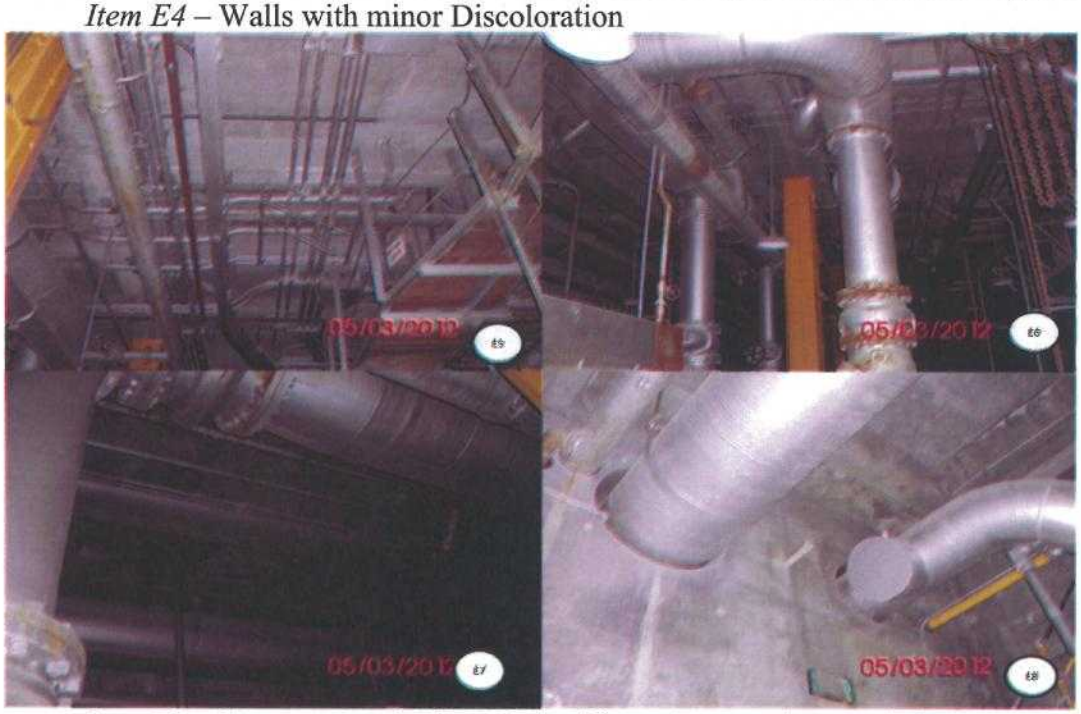
Figure 3 – Electrical Switchgear Room Inspection Map



Reference Figure 3 for Locations



Item E1 – Concrete Roof with NO significant Structural Degradation
Item E2 – Concrete Beam with NO significant Structural Degradation
Item E3 – Structures and Components with NO significant Structural Degradation
Item E4 – Walls with minor Discoloration



Item E5 - Concrete Roof with NO significant Structural Degradation
Item E6 – Structures and Components with NO significant Structural Degradation
Item E7 – Concrete Roof with NO significant Structural Degradation
Item E8 – Wall with Pipe Penetrations with NO significant Structural Degradation

Reference Figure 3 for Locations

Item E9 - Concrete Roof Penetration with NO significant Structural Degradation
Item E10 – Metal Stairs NO significant Structural Degradation
Item E11 – Concrete Stairs and Entry Way with NO significant Structural Degradation (Note: Particulates in room)
Item E12 – Balcony with NO significant Structural Degradation

ATTACHMENT E – 183D Evaluation Checklist

Washington Closure Hanford — *183D Evaluation Checklist*

Practitioner: P. Santos, P.E.

Date Evaluated: 5/3/2013

Contact: WCH, Fermi Drive, A226

Info: 372-9089 Engineering Services

LEGEND:

FE = Steel; RC = concrete; MA = Masonry; WO = Wood

CO = Corrosion; CR = Crack; SP = Spall; NA = No Visible Issues; OT = Other

P = Pending; DE = Deflection; EX = Suspected Existing; MI = moisture intrusion; ST = Possible Settlement; WI = Possible Wind Damage; CH = Corrosion Miscellarous

Surveillance & Maintenance Structural Inspection Sheet

Item No.:	Description	Area Location	Evaluation? (Y/N)	Material (FE/RC)	Condition (CO/CR/SP)	Notes/Causes: (P/DE/SP/MI/ST/WI/EX)
O1	Filter Room Masonry Wall	External Pathway	(Intentionally left blank)	RC	NA	(Intentionally left Blank)
O2	Concrete Walkway	External Pathway	(Intentionally left blank)	FE,RC	SP	CH
O3	Wood Stairs	External Pathway	(Intentionally left blank)	WO	OT	DE
O4	Concrete Walkway	External Pathway	(Intentionally left blank)	RC	CO, SP	CH
O5	Concrete Walkway	External Pathway	(Intentionally left blank)	RC	CO, SP	CH
O6	Concrete Walkway	External Pathway	(Intentionally left blank)	RC	CO, SP	CH
G1	Filter Room Concrete Pre-Cast Panel	Filter Room	(Intentionally left blank)	RC	CO,SP	P,DE, MI, CH
G2	Metal Wall Panels and Concrete Pathway	Filter Room	(Intentionally left blank)	FE,RC	CO	MI
G3	Concrete Walkway	Filter Room	(Intentionally left blank)		OT	Biol Hazard
M1	Structures, Systems, and Components (SSCs)	Pump House Area	(Intentionally left blank)	FE	NA	(Intentionally left Blank)
M2	Concrete Stairs	Pump House Area	(Intentionally left blank)	RC	NA	(Intentionally left Blank)
M3	Concrete Stairs, Bottom Landing	Pump House Area	(Intentionally left blank)	RC	NA	MI
M4	Filter Room Concrete Pre-Cast Panel and Steel Primary Structures	Pump House Area	(Intentionally left blank)	RC, FE	(Intentionally left Blank	(Intentionally left Blank)
M5	Filter Room Concrete Pre-Cast Panel and Steel Primary Structures	Pump House Area	(Intentionally left blank)	RC, FE	CO, SP	DE, MI, CH
M6	Roof Penetration	Pump House Area	(Intentionally left blank)	RC, FE	NA	(Intentionally left Blank)
E1	Concrete Roof	Pump House Basement &Electrical Room Area	(Intentionally left blank)	RC	NA	(Intentionally left Blank)
E2	Concrete Beam	Pump House Basement & Electrical Room Area	(Intentionally left blank)	RC	NA	(Intentionally left Blank)
E3	SSCs	Pump House Basement & Electrical Room Area	(Intentionally left blank)	FE	NA	(Intentionally left Blank)

E4	Wall	Pump House Basement & Electrical Room Area	(intentionally left blank)	RC	NA	(intentionally left Blank)
E5	Concrete Roof	Pump House Basement & Electrical Room Area	(intentionally left blank)	RC	NA	(intentionally left Blank)
E6	SSCs	Pump House Basement & Electrical Room Area	(intentionally left blank)	FE	NA	(intentionally left Blank)
E7	Concrete Roof	Pump House Basement & Electrical	(intentionally left blank)	RC	NA	(intentionally left Blank)
E8	Wall with Pipe Penetrations	Pump House Basement & Electrical Room Area	(intentionally left blank)	RC	NA	(intentionally left Blank)
E9	Roof Penetration	Pump House Basement & Electrical Room Area	(intentionally left blank)	RC	NA	(intentionally left Blank)
E10	Metal Stairs	Pump House Basement & Electrical Room Area	(intentionally left blank)	FE	NA	(intentionally left Blank)
E11	Concrete Stairs & Entry Way	Pump House Basement & Electrical Room Area	(intentionally left blank)	RC	NA	(intentionally left Blank)
E12	Balcony	Pump House Basement & Electrical Room Area	(intentionally left blank)	WO, RC, FE	NA	(intentionally left Blank)